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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/033,112	01/02/2002	Stephan Jourdan	2207/12005	7684

7590 04/19/2004

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12400 Wilshire Boulevard, Seventh Floor
Los Angeles, CA 90025

EXAMINER

LANE, JOHN A

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 04/19/2004

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application

10/033,112

Applicant(s)

JOURDAN, STEPHAN

Examiner

Jack A Lane

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 24-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 24-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office action is responsive to the amendment filed 03/25/04. Claims 20-23 have been canceled. Claims 1-19 and 24-28 are presented for examination. Any objections or rejections made in the previous office action not specifically repeated below are withdrawn.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 7, 9, 11-17, 20-26 and 28 are rejected under 35 U.S.C. § 102(b) as being anticipated by Shiell et al. (Pat. No. 6,119,222).

Shiell teaches the claimed step of "receiving a request for an instruction" as the request generated by fetch unit 26 shown in figure 1. The claimed step of "searching a cache system at a first level of the instruction" corresponds to searching level 1 instruction cache 16. The claimed step of "searching...a second level...in parallel with the first level...based on a prediction" corresponds to prefetching an instruction from the second level 2 cache 11 simultaneously with the fetch of the instruction from level 1

cache as discussed at column 6, lines 45-48. The prefetched information from the second level cache corresponds to **expected** cache misses (col. 6, line 51). The examiner contends an expected cache miss is a predicted cache miss. Information on bus UPD from grad queue and tag ck 27 includes information (e.g. addresses) for instruction that involve serious cache misses (col. 7, lines 2-6). The claimed "parameter value" corresponds to the values in prefetch counters T0 CTR, T1 CTR, N0 CTR and N1 CTR (col. 13, lines 12-16). If the counters are zero (zero is the predetermined threshold) the prefetch to second level cache 2 (or above) is preferably ignored as the sought-for contents are most likely already in lower level cache (i.e. level 1 instruction cache 16). If the counters are above zero the prefetch of second level cache 11 is permitted.

In the Remarks filed 03/25/04, applicant argues the following:

Indeed, it is clear from the discussion in Shiell that the term "expected cache misses" applies to instructions other than the branch instruction that is fetched from the first level.

In response, applicant should reconsider the function of prefetch counters T0 CTR, T1 CTR, N0 CTR and N1 CTR discussed above and in Shiell. The prefetch to second level 2 cache 11 (or above) is **preferably ignored** as the sought-for contents are most likely already in lower level cache (i.e. level 1 instruction cache 16 (or level 2 cache 16)). The examiner contends a prefetch of an instruction in a level 2 cache (or higher) can still be executed even though prefetch counters indicate the sought-for contents are most likely already in lower cache. The examiner also contends the process to prefetch sought-for instructions to level 2 cache occurs in **parallel** with the process to fetch sought

for instructions in level 1 cache (i.e. instructions most likely already in lower level 1 cache). The cache prefetch architecture of Shiell permits simultaneous searching of level 1 and level 2 cache.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6, 8, 10, 18, 19 and 27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Shiell et al. (Pat. No. 6,119,222).

The examiner believes most, if-not-all, claim features are taught by Shiell et al. However, in the event a claim feature(s) is not inherent applicant should consider the claim feature(s) in light of the Official notification put forth below.

Official notice is taken of the prior art teaching any claim feature not specifically discussed above. That is, any prior art (including that of record) teaching the more well known claim features commonly found in the dependent claims. The claim features, while part of the invention, appear to be well known and their relevance not essential to the main invention found in the independent claim(s). Thus, a detailed discussion of the



well known claim features is not warranted at this time. For example, claim 10 identifies a front end re-start instruction. The present specification (Summary) teaches a traditional instruction fetching process and the use of a front end re-start in order to “realign” the instruction supply engine with the program code. It would have been obvious to one having ordinary skill in the art at the time of the invention to combine Shiell with the admitted prior art or the officially taken prior art because realigning the instructions supply engine improves processing performance.

As per claims 6, 8, 18 and 19, computer readable storage mediums and storage thereon are well known for storing programs and data.

As per claim 27, Shiell teaches counters T0 CTR, T1 CTR, N0 CTR and N1 CTR. Counters are well known to use shift registers to perform their function. The examiner contends logic gating circuitry is inherent with the fetch unit 56 and/or prefetch control logic 23.

6. Applicant's arguments filed 03/25/04 have been fully considered but they are not deemed to be persuasive.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

8. A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Any response to this final action should be mailed to:
Box AF

Under Secretary of Commerce for Intellectual Property and Director of the
United States Patent and Trademark Office

PO Box 1450

Alexandria, VA 22313-1450

or faxed to:

(703) 872-9306, (for Official communications intended for entry)

Or:

(703) 872-9306, (for Non-Official or Draft communications, please
label "Non-Official" or "DRAFT")

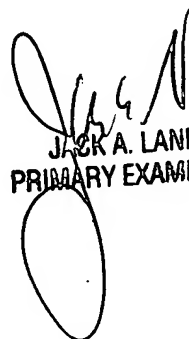
Hand-delivered responses should be brought to Crystal Park II, 2121
Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack A. Lane whose telephone number is 703 305-3818. The examiner can normally be reached on Mon-Fri from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 703 306-2903.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-3900.


JACK A. LANE
PRIMARY EXAMINER